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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/022,834	02/13/98	DEGENDT	S 98.162

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EXAMINER	
AHMED, S	
ART UNIT	**PAPER NUMBER**
1746	10

DATE MAILED: 08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/022,834	DEGENDT et al.
Examiner	**Group Art Unit**
Shamim Ahmed	1746

☒ Responsive to communication(s) filed on *Jun 13, 2000* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *27-39 and 41-60* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *27-39 and 41-60* is/are rejected.

☒ Claim(s) *41* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 27-39 and 41-50 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claim 41 is objected to because of the following informalities: Claim 41 depends on canceled claim 40. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 60 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for filling the tank with the liquid recited on page 15, lines 23-32 in the specification, does not reasonably provide enablement for "filling the tank with a fluid " in claim 60, line 4. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these

claims. The specification recites very specific amount of liquid is filled to achieve the desired cleaning process, which makes the claim broader than enabling disclosure.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 43 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 43 recites the limitation "ozone bubbles" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 27-39, 41-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakon et al (USP 5,560,857) in view of Stanford et al (5,244,000) and kern (Hand Book of Semiconductor wafer cleaning technology), and further in view of Sehested et al (J.Phys.Chem.).

Sakon et al disclose a cleaning solution comprises an aqueous solution containing hydrogen peroxide and an additives such as acetic acid (col.3, lines 31-50).

Sakon et al also disclose that the cleaning temperature should be in the range of 50-90 C, which is less than boiling point of the solution (col.4, lines 17-19).

Sakon et al further disclose that the additive is added about 0.02 mol/liter (See Table 1).

With the respect of claim 36 : It would have been obvious to one having ordinary skill in the art at the time of claimed invention to optimize the same, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Sakon et al remain silent about the additive, acetic acid is working as OH radical scavenger. It would have been obvious that the acetic acid acts as OH radical scavenger in aqueous ozone solution because it is well know stabilizer of aqueous ozone as taught by Sehested et al (see the introduction , page 1005).

Sakon et al fails to teach the rinsing step of the substrate after cleaning step and the liquid can be sprayed and also the liquid can be subjected to a megasonic agitation.

However, Stanford et al. describe a method for removing organic contaminants in which, liquid can be sprayed (col.9, lines 10-13).

Stanford et al. Further describe that after the substrate is treated for removal of contaminants, carbon dioxide is added to deionized water, which is applied to rinse or neutralize the treated substrate (col.7, lines 11-22).

Both Sakon et al and Stanford et al use hydrogen peroxide to remove contaminants but fail to teach ozone is used to remove contaminants from a substrate.

It would have been obvious to one having ordinary skill in the art to replace hydrogen peroxide with ozone because both are functionally equivalent as taught by Kern (page 52, line 2).

With the respect of the claims limitation 33,47 and 55: It would have been obvious to one having ordinary skill in the art at the time of claimed invention to incorporate megasonic agitation during cleaning process because it is mostly commonly used particle removal techniques for silicon wafer cleaning as taught by Kern (page 420, paragraph no. 5.3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Kern, Sehested et al and Stanford et al 's teaching into the method for removing contaminants as taught by Sakon et al for effective cleaning process for semiconductor substrate.

By doing so, one could have a substrate, which is free of organic contaminants and as well as any other impurities.

Double Patenting

10. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

11. Claim 49 is provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 27 of copending Application No. 09/207,546. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claim 60 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 27 of copending Application No. 09/207,546 because claim 60 of the instant case differs from the claim 27 of the copending Application No. 09/207,546 is that of the concentration of the additive in the fluid is not limited. It appears claim 60 broadly claims any concentration of the additive and hence embraces the claimed limitation.

This is a provisional obviousness-type double patenting rejection.

14. Claim 27 and 51 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 27 of copending Application No. 09/207,546. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to use fluid as a liquid.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Remarks

Though Carter et al (6,080,531) is not a prior art but disclose a method of removing organic contaminants in which a treating solution comprises deionized water, ozone a OH radical scavenger such as acetic acid is used (see abstract and specially the claims 17-18).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on (703) 308-4333. The fax phone number for this Group is (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

SA

August 28, 2000

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700